REMARKS

Claims 68-81 are pending in the subject application with claims 82-106 withdrawn from consideration. Applicants have hereinabove amended claims 68, 71, and 77. Claim 77 was amended to correct a typographical error. Accordingly, claims 68-81 are now currently pending.

Support for the amendments to claims 68 and 71 can be found in the specification as originally filed at, *inter alia*, as follows: claim 68: page 1, lines 22-24; page 2, lines 26-27; page 10, lines 11-14; and original claim 1; and claim 71: page 3, lines 8-11; and page 10, lines 11-14. Accordingly, applicants maintain that amended claims 68, 71, and 77 introduce no new matter and are fully supported by the application as originally filed.

Rejection Under 35 U.S.C. 102(b)- Novelty

The Examiner rejected claims 68-81 under 35 U.S.C. 102(b) as being anticipated by Simmons et al. (1994, Advances in Bone Marrow Purging and Processing: Fourth Symposium 389, pages 271-280). The Examiner asserted that Simmons et al., teach an enriched cell population of mesenchymal precursor cells that are capable of giving rise to CFU-F and composition comprising said cells (see entire document, page 272 and Figure 2 in particular). The Examiner also asserted that Simmons et al., teach that said enriched cell population carry the antigen identified by STRO-1 antibody and that said cells are also positive for VCAM, LFA-3, THY-1, P-selectin, L-selectin, CD49b/CD29 surface markers (see Table 1 in particular). The Examiner further asserted that

Simmons et al., teach that said cells are capable of differentiation into at least adipocytes, osteoblasts and fibroblast (see Figure 1 in particular). The Examiner acknowledged that the reference is silent about that said enriched cell population of mesenchymal precursors are positive for cell markers 3G5 or MUC18/cd146, as recited in claims 71-76, or positive for one or more markers, recited in claim 77, or negative for the markers recited in claim 78, or capable of forming a clonogenic colony, as recited in claims 80 and 81. The Examiner asserted, however, that these limitations would be inherent properties (emphasis added) of the referenced cell composition because the referenced cell composition is allegedly the same as claimed. The Examiner asserted that it is applicants' burden to show that the reference cell population does not have the same properties as recited in the claims.

The Examiner also rejected claims 70 and 79 asserting that the claimed functional limitation would be allegedly inherent properties of the referenced enriched cell population and composition comprising said cells. The Examiner asserted that "[a] cell population is a cell population irrespective of their intended use or method of obtaining in the absence of evidence of structural difference." Therefore, according to the Examiner, the reference anticipates the claimed invention.

Applicants' Response

In response, applicants respectively traverse the Examiner's rejection. However, in order to expedite the prosecution of the subject application, applicants

hereinabove amended claims 68 and 71. Applicants submit that the present claims are limited to a population of MPCs that is enriched for the marker 3G5 and capable of giving rise to progeny consisting of two or more tissue types. As explained in the specification, this marker is particularly useful for isolating mesenchymal precursor cells (MPCs) from perivascular tissue, including non-haemopoietic vascularized tissue.

In contrast, Simmons et al. describe enrichment of STRO-1$^+$ cells from haemopoietic tissue, namely bone marrow, but nowhere does Simmons et al. suggest enriching for 3G5 positive cells.

Applicants submit that enrichment for 3G5 positive cells does not occur inherently in the method described in Simmons et al. As explained in the specification on page 26, lines 4 to 16, the marker 3G5 is highly expressed by a large population (54%) of hematopoietic marrow cells. However, only a minor proportion (14%) of MPCs (which give rise to clonogenic colonies) isolated from hematopoietic marrow cells express 3G5 (see Figure 4B). Accordingly, isolation of MPCs from bone marrow based on enrichment of cells expressing the STRO-1 marker as discussed in Simmons et al. does <u>not</u> result in an enrichment of the cells expressing the 3G5 marker. In fact the opposite occurs. The starting bone marrow cell population has a higher proportion of 3G5 positive cells than the isolated MPCs (see page 26, lines 6-12).

Accordingly, it is the applicants' position that (i) Simmons et al. do not teach all elements of the claimed invention; (ii) Simmons et al. do not inherently disclose all elements of the claimed invention; and (iii) the requirements for inherent anticipation have not been met in the rejection set forth.

With regard to point (iii), as noted in M.P.E.P. §706.02(a) "for anticipation under 35 U.S.C. 102, the reference must teach *every aspect* of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present" (emphasis added).

With regard to inherent anticipation, "[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993)", as cited in M.P.E.P. §2112. More specifically, "[t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.*' In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999)" (M.P.E.P. §2112) (emphasis added).

Accordingly, applicants submit that Simmons et al. do not inherently teach a population of MPCs enriched for 3G5

positive cells, as recited in the claims. Moreover, the Examiner has acknowledged that the reference is silent about cell marker MUC18/cdl46 as recited in claims 71-74, or that the population is positive for one or more markers recited in claim 77, or negative for the markers recited in claim 78, or capable of forming a clonogenic colony as recited in claims 80 and 81. These limitations would not be inherent properties (to the extent an anticipation rejection based on inherency requires certainty) of the referenced cell composition because the referenced cell composition is not the same as the claimed invention as explained above. Similarly, the claimed functional limitation of claims 70 and 79 would also not be inherent properties of the referenced enriched cell population. Therefore, applicants submit that Simmons et al. do not anticipate the claimed invention.

Accordingly, applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection.

Rejection Under 35 U.S.C. 102(e) - Novelty

The Examiner rejected claims 68-81 under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,087,113 (issued to Caplan et al., 2000) as is evidenced by Simmons et al. (1994) or U.S. Patent No. 7,122,178 (issued to Simmons et al., 2006) or U.S. Patent Application No. 2005/0281790 or WO 01/04268.

The Examiner asserted that U.S. Patent No. 6,087,113 teaches an enriched cell population of mesenchymal

precursor cells and a composition comprising said cells. (see entire document, overlapping columns 3 and 4 in particular). The Examiner asserted that U.S. Patent No. 6,087,113 teaches that it is possible to get up to 95% of enriched cell population of mesenchymal precursor cells (see column 7, lines 10-25 in particular). The Examiner also asserted that U.S. Patent No. 6,087,113 teaches that said enriched cell population carry the antigen identified by STRO-1 antibody (see column 40, lines 21-35 in particular). The Examiner further asserted that U.S. Patent No. 6,087,113 teaches that said cells are capable of differentiation into cartilaginous and fibrous tissue (see overlapping columns 8 and 9 in particular).

The Examiner also asserted that U.S. Patent No. 7,122,178 teaches an enriched cell population of mesenchymal precursor cells, wherein said composition are enriched for STRO-1^{bright} cells and wherein said cells are capable of giving rise to CFU-F (see entire document, claims 1-13 in particular).

The Examiner also asserted that U.S. Patent Application No. 2005/0281790 teaches an enriched cell population of mesenchymal precursor cells, wherein said composition are enriched for STRO-1^{bright} cells and wherein said cells are capable of giving rise to CFU-F (see entire document, claims 52-78 in particular).

The Examiner acknowledged that the references (i.e. U.S. Patent Nos. 6,087,113 and 7,122,178, and U.S. Patent Application No. 2005/0281790) are silent about that said

enriched cell population of mesenchymal precursors are positive for cell markers 3G5 or MUC18/cdl46, as recited in claims 71-76, or positive for one or more markers, recited in claim 77, or negative for the markers recited in claim 78, or capable of forming a clonogenic colony, as recited in claims 80 and 81. The Examiner asserted, however, that these limitations would be inherent properties of the referenced cell composition because the referenced cell composition is the same as claimed, and it is applicants' burden to show that the reference cell population does not have the same properties as recited in the claims.

The Examiner also rejected claims 70 and 79 asserting that the claimed functional limitation would allegedly be inherent properties of the referenced enriched cell population and composition comprising said cells. Therefore, according to the Examiner, the reference teachings anticipate the claimed invention.

Applicants' Response

U.S. Patent No. 6,087,113

In response, applicants respectively traverse the Examiner's rejection. The Examiner asserted that U.S. Patent No. 6,087,113 teaches that it is possible to get an enriched population of MPCs that carry the antigen identified by STRO-1 antibody. The Examiner referred in particular to column 40, lines 21-35. Applicants submit that the Examiner's interpretation of this patent is incorrect. The discussion at column 40, lines 21-35 merely states that the MSCs were probed with a STRO-1 antibody.

The results on Table 5 show that STRO-1 was in fact absent from the cell surface. This is confirmed in the paragraph bridging columns 40 and 41 which states:

> "Epitopes to markers that identify differentiated mesenchymal phenotypes are *not* detected by our analysis including those synthesized by chondrocytes (type II collagen, keratin sulphate (KS)), osteoblasts (Bone Gia Protein (BGP)), basement membrane fibroblasts (laminin, elastin and type IV collagen), marrow stromal cell progenitors *(Stro-1 antigen)* and endothelial cells (von Wilebrand factor)." [emphasis added]

In any event, the claims as modified refer to a population of MPCs enriched for 3G5 positive cells. This is not taught explicitly or inherently in U.S. Patent No. 6,087,113. Accordingly, it is the applicants' position that U.S. Patent No. 6,087,113 does not teach all elements of the claimed invention.

Moreover, the Examiner has acknowledged that the cited patent is silent about MUC18/cd146, as recited in claims 71 and 74, or that the population is positive for one or more markers, recited in claim 77, or negative for the markers recited in claim 78, or capable of forming a clonogenic colony, as recited in claims 80 and 81. These limitations would not be inherent properties (to the extent an anticipation rejection based on inherency requires certainty) of the referenced cells composition because the referenced cells are not the same as the claimed invention as explained hereinabove. Similarly, the claimed functional limitation of claims 70 and 79 would also not be inherent properties of the cell population disclosed in the prior

art. Therefore, applicants submit that U.S. Patent No. 6,087,113 do not anticipate the claimed invention.

Nonstatutory Obviousness-Type Double Patenting Rejection

Rejection Over U.S. Patent No. 7,122,178

The Examiner rejected claims 68-81 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-13 of U.S. Patent No. 7,122,178. The Examiner stated that although the conflicting claims are not identical, they allegedly are not patentably distinct from each other because claims 1-13 of U.S. Patent No. 7,122,178 recited an enriched cell population, of mesenchymal precursor cells, enriched for STRO-1^{bright} cells, capable of giving rise to CFU-F.

Applicants' Response

In response, applicants submit that U.S. Patent No. 7,122,178 claims a population of cells enriched for STRO-1^{bright} cells, wherein the enriched cells are mesenchymal precursor cells capable of giving rise of progeny cells. For reasons discussed above, isolation of MPCs using the STRO-1 marker does not result in an enrichment of the cells expressing the marker 3G5. Accordingly, claims 68-81 are not obvious over claims 1-13 of U.S. Patent No. 7,122,178. Accordingly, applicants respectfully request that the Examiner reconsider and withdraw this ground of rejection.

Rejection Over Co-pending Applications No. 11/169,875 and 10/553,633

The Examiner provisionally rejected claims 68-81 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 52-78 of co-pending Application No. 11/169,875. Although the conflicting claims are not identical, they allegedly are not patentably distinct from each other because claims 52-78 of co-pending Application No. 11/169875 recited an enriched cell population, of mesenchymal precursor cells, enriched for STRO-1^{bright} cells.

The Examiner also provisionally rejected claims 68-81 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 59-65 of co-pending Application No. 10/553,633. Although the conflicting claims are not identical, they allegedly are not patentably distinct from each other because claims 59-65 of co-pending Application No. 10/553,633 recited an isolated human stem cells population, wherein said cells expressed SRTO-1.

Applicants' Response

In response, applicants note that the current rejections are provisional as the cited applications are not patented or allowed. Accordingly, if these provisional rejections are the only outstanding rejections after entry of this amendment and consideration of the arguments presented herein, applicants request that these rejections be withdrawn.